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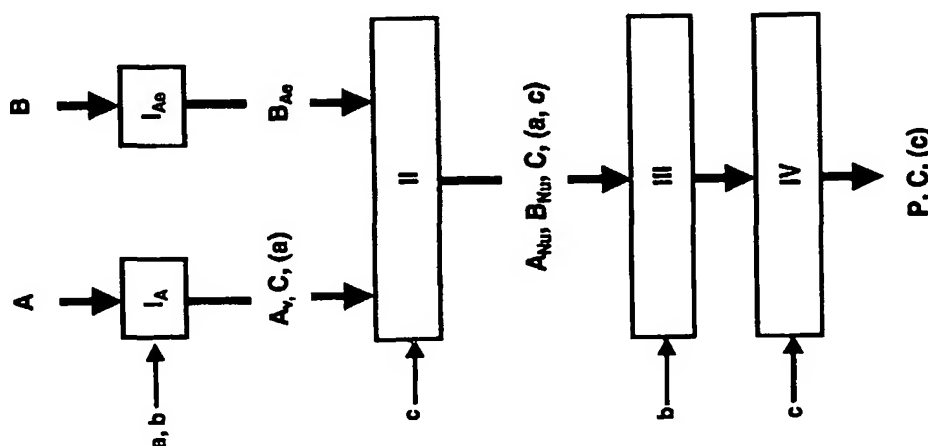
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ance Notes on Codes and Abbreviations" appearing at the begin-
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(54) Title: DOPED ZINC OXIDE POWDER, PROCESS FOR ITS PREPARATION, AND ITS USE



(57) Abstract: Pyrogenically prepared, doped zinc oxide powder, wherein the doping component comprises at least one oxide from the group aluminium, gallium, indium, germanium, tin and is present in the doped zinc oxide powder in an amount of from 0.005 to 15 wt.%, and wherein the doped zinc oxide powder is in the form of aggregates of primary particles having a mean maximum diameter of from 30 to 400 nm. It is prepared by oxidation from zinc powder and at least one doping agent, wherein the process zones vaporisation, nucleation, oxidation and quenching are passed through and the doping agent is metered in in the nucleation zone, in which the temperature is below the boiling temperature of zinc. The doped zinc oxide powder can be used in electrically conductive lacquers and coatings.

INTERNATIONAL SEARCH REPORT

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A. CLASSIFICATION OF SUBJECT MATTER
IPC 7 C01G9/03 C01G9/00 C09C1/04

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

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Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

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C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	EP 0 597 380 A (MITSUI MINING & SMELTING CO) 18 May 1994 (1994-05-18)	1-10
A	page 3, line 1 -page 5, line 38; claims 1-10; table 1	11
A	FUNAHASHI T ET AL: "MANUFACTURE OF ZINC OXIDE FINE PARTICLES WITH LARGE SPECIFIC SURFACE AREA" CHEMICAL ABSTRACTS + INDEXES, AMERICAN CHEMICAL SOCIETY. COLUMBUS, US, vol. 109, no. 22, 1 November 1988 (1988-11-01), page 167 XP000019653 ISSN: 0009-2258 abstract	1-18

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C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT		
Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	GB 435 005 A (AMERICAN ZINC LEAD & SMELTING) 12 September 1935 (1935-09-12) claims 1-11	11-17
T	WO 03 080515 A (DEGUSSA ;KRESS PETER (DE); STAAB EDWIN (DE); KATUSIC STIPAN (DE);) 2 October 2003 (2003-10-02) the whole document	1-18

INTERNATIONAL SEARCH REPORT

Information on patent family members

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Patent document cited in search report		Publication date	Patent family member(s)	Publication date
EP 0597380	A	18-05-1994	JP 3242469 B2	25-12-2001
			JP 6144834 A	24-05-1994
			DE 69303143 D1	18-07-1996
			DE 69303143 T2	31-10-1996
			EP 0597380 A1	18-05-1994
			US 5560871 A	01-10-1996
GB 435005	A	12-09-1935	NONE	
WO 03080515	A	02-10-2003	DE 10212680 A1	09-10-2003
			WO 03080515 A1	02-10-2003

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